

REMARKS

Claims 1-14 are pending in this application. Claims 1, 5, and 12 have been amended. These amendments find support in the specification and the previous claims. Specifically, claim 1 has been amended as a matter of form to correct an obvious grammatical error wherein the article "a" was inadvertently omitted. Claim 5 has been amended to remove the term "selectively" as supported in the specification, for example paragraph [0003], and in the claims. Claims 1 and 12 have been amended to recite a plurality of teeth of said toothed blades having a positive rake as supported in the specification in paragraph [0021]. Claim 1 has also been amended to recite an interior chamber having a "V-shaped cross-section" as supported in the specification in paragraph [0017]. Finally, claim 12 has been amended to recite metal or metal alloy feed material as supported in the specification in paragraph [0030]. Thus, it is submitted that no new matter has been added as a result of the amendments to the claims. The Applicant respectfully traverses the rejections for the reasons expressed herein below.

Objections to the Specification

The abstract is objected to under 37 C.F.R. § 1.72(b) for exceeding 150 words. The abstract has been amended to reduce the word count to below 150. Thus, it is respectfully requested that this objection be withdrawn.

The disclosure is objected to under 37 C.F.R. § 1.71 regarding the description. Claim 5 has been amended to remove the term "selectively," which was objected to

(see also, the reply to rejection under 35 U.S.C. § 112, *infra*). Thus, it is respectfully requested that the objection be withdrawn.

Objections to the Claims

Claim 1 is objected to for an informality. Claim 1 has been amended to recite the article "a," thereby correcting the informality. It is respectfully requested that the objection to this claim be withdrawn.

A. Rejection of claim 5 under 35 U.S.C. § 112, first paragraph

Claim 5 stands rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

For consistency with the other claims, and to more quickly advance this application to a condition of allowance, the Applicant has deleted the word "selectively." It is submitted that this amendment has been made to correct matters of form only, and should not be construed as affecting the scope or equivalency of the claims. Accordingly, withdrawal of the rejection of claim 5 under 35 U.S.C. § 112, first paragraph, is respectfully requested.

B. Rejection of claims 1, 2, 4, 10, 11, and 12 under 35 U.S.C. § 102(b)

The Examiner has rejected claims 1, 2, 4, 10, 11, and 12 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,827,304 to Rousseau (hereinafter, the '304 patent). Specifically, the Examiner asserts that the '304 patent discloses all elements of the claimed invention. According to the MPEP § 2131, "[a] claim is

anticipated only if each and every element as set forth in the claims is found, either expressly or inherently described, in a single prior art reference."

As an initial matter, claims 1 and 12 have been amended to recite blades having a positive rake as supported in the specification in paragraph [0021]. It is noted that the '304 patent does not disclose or otherwise suggest blades with a positive rake, and thus the '304 patent is distinguishable from the invention recited in claims 1 and 12 based on this element alone. Accordingly, amended claims 1 and 12 are patentable over the '304 patent for at least the foregoing reason. Claims 2, 4, 10, and 11 depend directly or ultimately from claim 1. Accordingly, for like reasons, each of these dependent claims is patentable over the '304 patent. Thus, it is respectfully requested that the rejection under 35 U.S.C. § 102(b) in light of the '304 patent be withdrawn.

Claim 1 has also been amended to recite an interior chamber having a V-shaped cross section. As described in the specification in paragraph [0018], the V-shaped profile allows the feed material to drop down by gravity and accumulate within a relatively small region. As described in the specification, this design enhances the efficiency of the cutting. It is noted that the '304 patent does not disclose or otherwise suggest an interior chamber having a V-shaped cross section, and thus the '304 patent is distinguishable from the invention recited in claim 1 based on this element as well. Thus, amended claim 1 is patentable over the '304 patent for at least the foregoing reason. Claims 2, 4, 10, and 11 depend directly or ultimately from claim 1. Accordingly, for like reasons, each of these dependent claims is patentable over the '304 patent. Thus, it is respectfully requested that the rejection under 35 U.S.C. § 102(b) based on '304 patent be withdrawn.

C. Rejection of claims 1, 4, 11, and 12 under 35 U.S.C. § 102(b)

In the alternative, the Examiner has rejected claims 1, 4, 11, and 12 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,678,126 to Prentice *et al.* (hereinafter, the '126 patent). Specifically, the Examiner asserts that the '126 patent discloses all elements of the claimed invention. According to MPEP § 2131, "[a] claim is anticipated only if each and every element as set forth in the claims is found, either expressly or inherently described, in a single prior art reference."

Claims 1, 4, 11, and 12 are distinguishable because the '126 patent does not describe a device wherein the arbor to which the blades are mounted is disposed outside the interior volume of a cutting chamber (see for example Figure 3 of the '126 patent). In both the original and amended claims of the instant application, the arbor is disposed outside the interior volume of the cutting chamber and is, therefore, separated from the incoming feed material while it is resident in the interior volume. Thus, claims 1 and 12 are patentable over the '126 patent for at least the foregoing reason. Each of the remaining rejected claims depends directly or ultimately from claim 1. Accordingly, for like reasons, each of the dependent claims is patentable over the cited references. Thus, it is respectfully requested that the rejection under 35 U.S.C. § 102(b) in light of the '304 patent be withdrawn.

D. Rejection of claim 12 [sic] under 35 U.S.C. § 103(a)

As an initial matter, this rejection may be directed to the wrong claim. Claim 12 does not recite a mesh size at all, but claim 14 does. To the extent that the Examiner is rejecting claim 14 under 35 U.S.C. § 103(a) as having been obvious in light of U.S. Patent No. 4,678,126 to Prentice *et al.* (the '126 patent, as recited *supra*), the Applicant makes the following remarks.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the combination of prior art. MPEP §2143 and §2143.03. In addition, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. MPEP §2143. Put another way, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination or modification. The Applicant respectfully submits that the '126 patent does not render obvious claim 14 of the present application because, for example, the '126 patent does not recite or suggest the recited particle size limitation of no greater than mesh size 10, nor does the Office Action identify any passage that would have motivated one to combine the cited references to result in such an upper limit of mesh size.

Moreover, the '126 patent does not teach certain other features incorporated in claim 14. The '126 patent does not describe a device including an arbor disposed outside the interior volume (see, for example, Figure 3 of the '126 patent). In both the original and amended claims of the instant application, the arbor is disposed outside the

interior volume and, therefore, separated from the incoming feed material in the interior volume. Thus, claim 12 is patentable over the art for at least the foregoing reason.

The Examiner also fails to meet the burden to show the '126 reference could be modified to achieve the result of particles being reduced to no greater than 10 mesh, as recited in claim 14. Instead, the Office Action states that it is "ordinary engineering" to set the crushed particle size (Office Action mailed January 13, 2005, page 4). However, the Office Action fails to recite what is such "ordinary engineering". Without this critical disclosure, the '126 patent, fails to teach how one would design the device in the '126 patent to reduce the particle size of feed material to no greater than mesh size 10. Because the Examiner has not cited a reference that describes or suggests modifications necessary to achieve the results cited in claim 14, the Examiner has not met his burden to establish the obviousness of claim 14.

Third, the Examiner has failed to establish a *prima facie* case of obviousness because it has not shown some objective teaching in the prior art and/or that knowledge generally available to one of the ordinary skill in the art would lead that individual to combine the relevant teachings. In this instance, the Examiner acknowledges that the '126 patent fails to disclose a crushed particle size no greater than about 10 mesh. The lack of a limitation within the '126 reference cannot be inferred to disclose or even reasonably suggest the limitation of size to no greater than about 10 mesh. The Office Action derives the limitation of particle size by stating a mere conclusion that the modification to the reference would have been a matter of "simple design choice" (Office Action mailed January 13, 2005, page 5) but fails to state a reason for making this choice. It is a truism that every invention is based on "design choice." However, the

burden remains on the Examiner to show why one of skill in the art would be directed to making such a choice. The motivation for choosing the limitation of size to no greater than about 10 mesh is not explained in the Office Action. Thus, for this reason a *prima facie* case has not been established, and the Applicant respectfully requests that the rejection be withdrawn.

Even, assuming *arguendo*, the USPTO's *prima facie* burden were met here, it is rebutted by the fact that the claimed apparatus and method for comminuting a feed material achieve a particle size up to 10 mesh. As described in the specification, it is difficult to generate such small particles without smearing and galling using methods known in the art. The instant invention solves this problem. The Applicant respectfully requests that the rejection be withdrawn.

E. Rejection of claims 3, 7, and 8 under 35 U.S.C. § 103(a)

The Examiner has rejected claims 3, 7, and 8 under 35 U.S.C. § 103(a) as having been being obvious over U.S. Patent No. 4,678,126 to Prentice *et al.* (the '126 patent, as recited *supra*), in view of U.S. Patent No. 2,853,247 to Anderson, U.S. Patent No. 4,221, 341 to Schymura *et al.*, and U.S. Patent No. 4,641,787 to Petersen *et al.*

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the combination of prior art. MPEP §2143 and §2143.03. As described *supra*, independent claim 1, from which claims 3, 7, and 8 depend, has been amended to provide the elements of at least one blade having a positive rake and a cutting chamber defining an interior volume having a V-shaped cross section. Because these elements are neither taught nor suggested in the cited

references, the claimed invention would not have been obvious from the references. Thus, it is respectfully requested that the rejection be withdrawn.

F. Rejection of claim 5 under 35 U.S.C. § 103(a)

The Examiner has rejected claim 5 under 35 U.S.C. § 103(a) as having been obvious over U.S. Patent No. 6,827,304 to Rousseau *et al.* (the '304 patent, as recited *supra*).

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the combination of prior art. MPEP §2143 and §2143.03. As described *supra*, independent claim 1, from which claim 5 depends, has been amended to provide the elements of at least one blade having a positive rake and a cutting chamber defining an interior volume having a V-shaped cross section. Because these elements are neither taught nor suggested in the cited references, the claimed invention would not have been obvious from the references. Thus, it is respectfully requested that the rejection be withdrawn.

G. Rejection of claims 6 and 9 under 35 U.S.C. § 103(a)

The Examiner has rejected claims 6 and 9 under 35 U.S.C. § 103(a) as having been obvious over U.S. Patent No. 4,678,126 to Prentice *et al.* (the '126 patent, as recited *supra*), in view of U.S. Patent No. 6,666,395 to Cavalieri, and U.S. Patent No. 361,000 to Creager.

As noted, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the combination of prior art. MPEP §2143 and §2143.03. As described *supra*, independent claim 1, from which claims 6 and 9 depend, has been amended to provide the elements of at least one blade having a positive rake and a cutting chamber defining an interior volume having a V-shaped cross section. Because these elements are neither taught nor suggested in the cited references, the invention would not have been obvious from the references. Thus, it is respectfully requested that the rejection be withdrawn.

H. Rejection of claim 13 under 35 U.S.C. § 103(a)

The Examiner has rejected claims 13 under 35 U.S.C. § 103(a) as having been obvious over U.S. Patent No. 4,678,126 to Prentice *et al.* (the '126 patent, as recited *supra*), in view of U.S. Patent No. 4,004,739 to Cramer, and U.S. Patent No. 5,918,820 to Ikeda *et al.*

As a matter of record, the Applicant disagrees with the assertion in the Office Action that metals such as titanium and copper are “brittle.” (Office Action mailed January 13, 2005, page 6). In fact, such ductile metals are the opposite of brittle. It is well known in the art that copper is known for its ductility and titanium (free of oxygen) is also ductile. See, for example, <http://www.speclab.com/elements/copper.htm>, and <http://www.speclab.com/elements/titanium.htm>. For a discussion of ductility vs. brittleness, see for example, the following: <http://www.materialsengineer.com/CA-ductbrit.htm>; http://www.roymech.co.uk/Useful_Tables/Mechanics/stress.html; and <http://www.tpub.com/steelworker1/2.htm>. As such, the Applicant asserts that the

rejection is based on a misapprehension of claimed method. One objective of the claimed methods is to reduce the particle size of non-brittle materials. Thus, the rejection should be withdrawn on these grounds alone.

However, to the extent that the rejection is maintained, Applicant asserts that the Examiner has not met the burden of proof for a *prima facie* case of obviousness because the cited references, either alone or in combination, do not teach or suggest each and every limitation in the claim. As an initial matter, the cited art does not describe the limitation of an arbor disposed outside the interior volume (see for example Figure 3 of the '126 patent). In both the original and amended claims of the instant application, the comminution device and method comprise an arbor that is disposed outside the interior chamber and, therefore, separated from the incoming feed material while resident in the interior volume of the cutting chamber. Thus, claim 13 is patentable over the cited art for at least the foregoing reason. It is also noted that the cited references do not teach the use of any zirconium, magnesium, niobium, calcium, potassium, hafnium, and aluminum as feed material.

Further, under §103, the USPTO can only satisfy a *prima facie* case of obviousness by showing some objective teaching in the prior art and/or that knowledge generally available to one of the ordinary skill in the art would lead that individual to combine the relevant teachings. Although titanium and copper are disclosed in the cited references as feed materials, the Office Action has not provided any suggestion or teaching that the claimed metals could be used in a comminution method such as that claimed in the instant application. Instead, the Office Action aggregates all comminution methods into the same genus and presumes all materials are interchangeable, despite

the fact that the effectiveness of comminution will depend on both the feed material and the type of device used in the method. The comminution device in the '126 patent is directed to crushing stone. Thus, the Office Action fails to describe why one of skill in the art would be motivated to use either copper or titanium in the method as described in the '126 patent to prevent galling and smearing of the metal. Those of skill in the art would not be motivated to use stone crushing methods to comminute soft metals and alloys. Thus, the *prima facie* burden cannot be met, and the rejection should be withdrawn.

Even assuming *arguendo* that a *prima facie* case is supported, it is rebutted by the fact that the claimed method is particularly advantageous for comminution of non-brittle metals and alloys, as described in the specification, for example, in paragraph [0027]. Because metals tend to gall and smear during reduction to particles, the method of claim 13 provides an unexpected advantage over prior comminution methods. For this and the reasons described *supra*, the rejection should be withdrawn.

CONCLUSION

Applicant submits that claims 1-14 of the present invention are both novel and non-obvious. The cited references do not teach or suggest the claimed device or processes, either alone or in combination. In view of the foregoing, Applicant respectfully submits that the subject application is in condition for allowance. Accordingly, reconsideration of the rejections and allowance of claims 1-14 at an early date are earnestly solicited.

If the undersigned can be of assistance to the Examiner in addressing issues to advance the application to allowance, please contact the undersigned at the number set forth below

Respectfully submitted,

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